

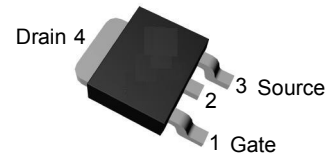
Features

- -30V/-20A,
 $R_{DS(ON)} = 50m\Omega(\text{typ.}) @ V_{GS} = -10V$
 $R_{DS(ON)} = 60m\Omega(\text{typ.}) @ V_{GS} = -4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- Moisture Sensitivity Level MSL1
(per JEDEC J-STD-020D)

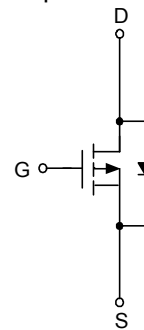
Applications

- Power Magagement in Desktop or DC/DC Converters

Pin Description



Top View of TO-252-2



P-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
V _{DSS}	Drain-Source Voltage		-30	V
V _{GSS}	Gate-Source Voltage		±25	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _C =25°C	-20	A
I _D	Continuous Drain Current (V _{GS} =-10V)	T _C =25°C	-20	A
		T _C =100°C	-8	
I _{DM} ^a	300μs Pulsed Drain Current (V _{GS} =-10V)	T _C =25°C	-60	
P _D	Maximum Power Dissipation	T _C =25°C	50	W
		T _C =100°C	20	
R _{θJC}	Thermal Resistance-Junction to case	Steady State	2.5	°C/W
I _D ^b	Continuous Drain Current (V _{GS} =-10V)	T _A =25°C	-14.3	A
		T _A =70°C	-11.4	
P _{Db} ^b	Maximum Power Dissipation	T _A =25°C	6.25	W
		T _A =70°C	4	
R _{θJA} ^b	Thermal Resistance-Junction to Ambient	t ≤ 10s	20	°C/W
		Steady State	50	
I _{AS} ^c	Avalanche Current, Single pulse	L=0.3mH	-20	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.3mH	60	mJ

Note * : Calculated continuous current based on maximum allowable junction temperature. Bonding wire limitation current is 40A.

Note a : Pulse width is limited by maximum junction temperature.

Note b : Surface Mounted on 1in² pad area, t ≤ 10sec.

Note c : UIS tested and pulse width limited by maximum junction temperature (initial temperature T_J=25°C).

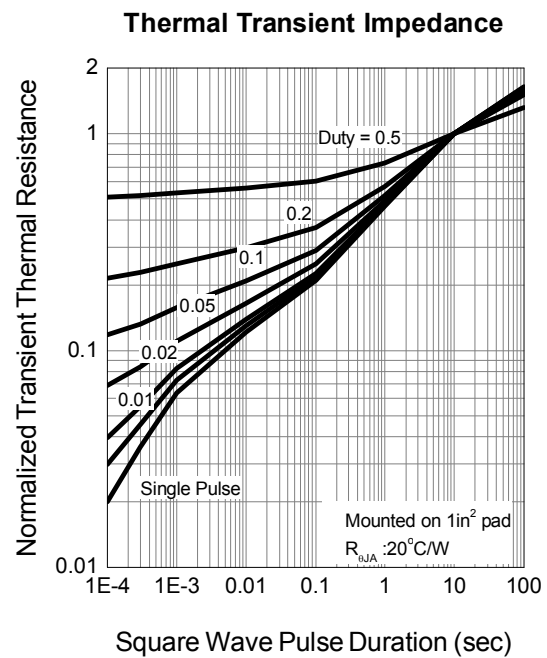
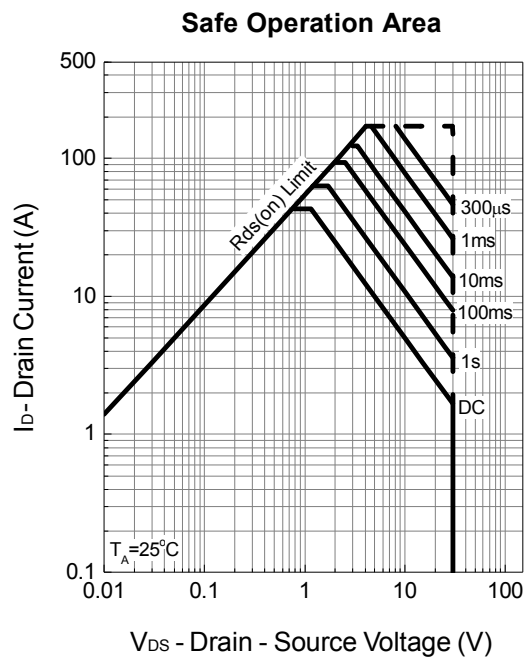
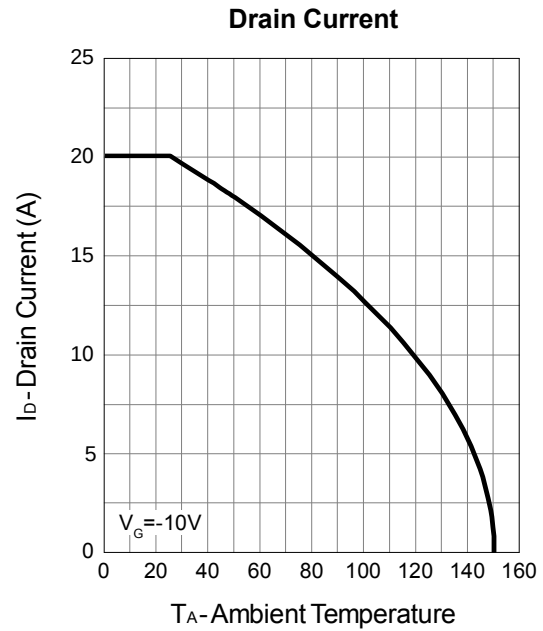
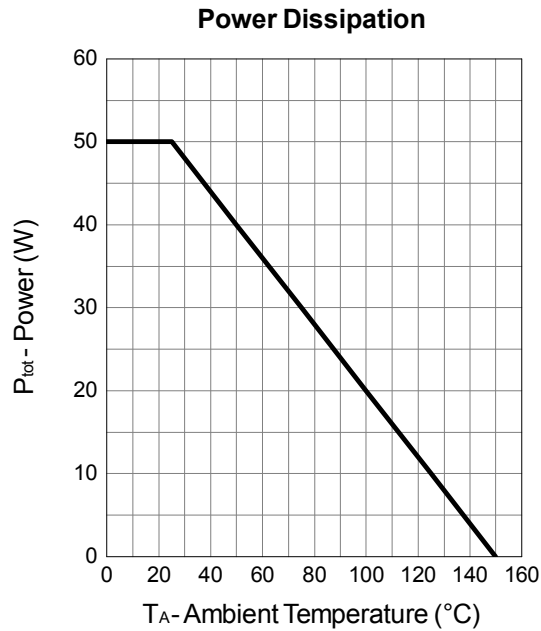
Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V	-	-	-1	μA
		T _J =85°C	-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.5	-2	-2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-20A	-	50	55	mΩ
		V _{GS} =-4.5V, I _{DS} =-5A	-	60	65	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr} ^e	Reverse Recovery Time	I _{SD} =-20A,	-	19	-	ns
Q _{rr} ^e	Reverse Recovery Charge	di _{SD} /dt=100A/μs	-	10	-	nC
Dynamic Characteristics ^e						
R _g	Gate Resistance	V _{GS} =0V,	-	3	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	700	-	pF
C _{oss}	Output Capacitance		-	110	-	
C _{rss}	Reverse Transfer Capacitance		-	50	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	8	-	ns
t _r	Turn-on Rise Time		-	12	-	
t _{d(OFF)}	Turn-off Delay Time		-	32	-	
t _f	Turn-off Fall Time		-	16	-	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-20A	-	21	-	nC
Q _{gs}	Gate-Source Charge		-	2.6	-	
Q _{gd}	Gate-Drain Charge		-	6.2	-	

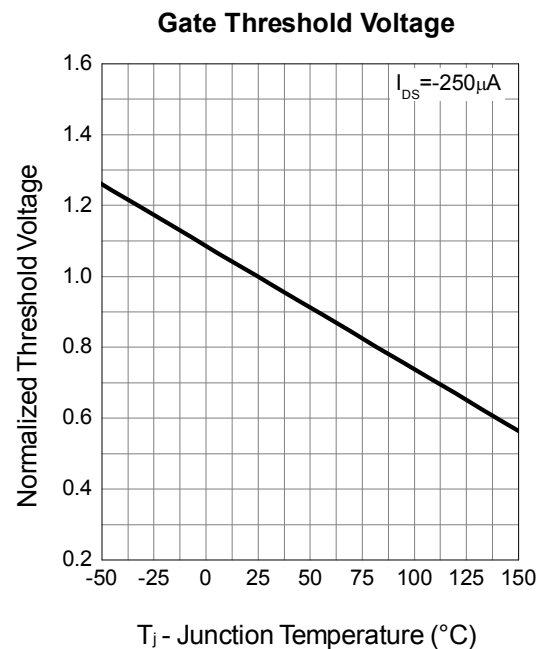
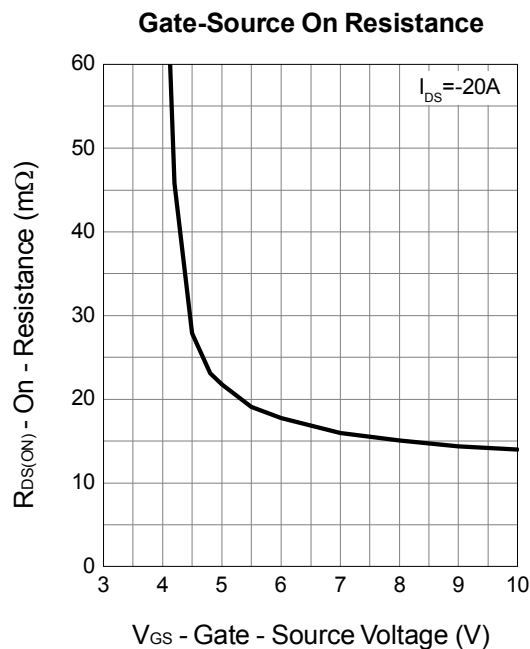
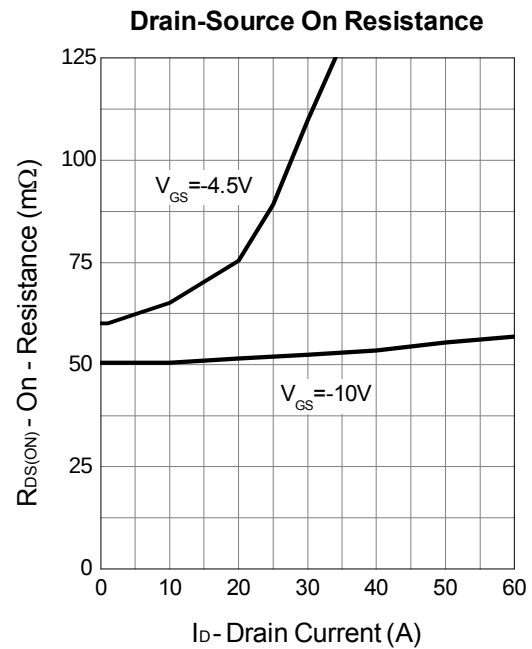
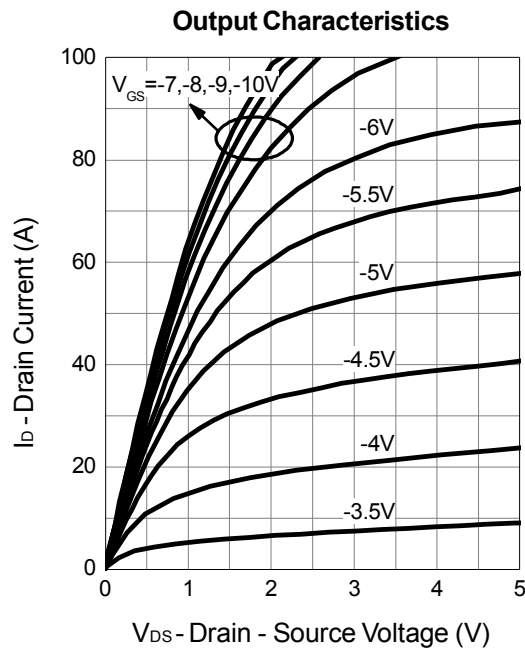
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note e : Guaranteed by design, not subject to production testing.

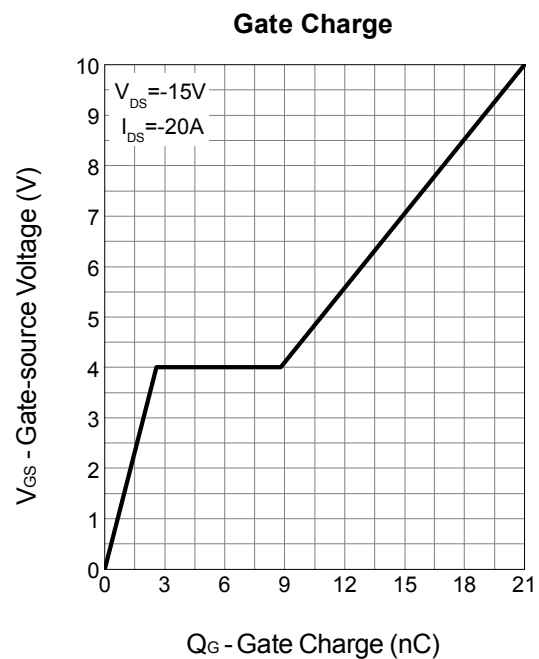
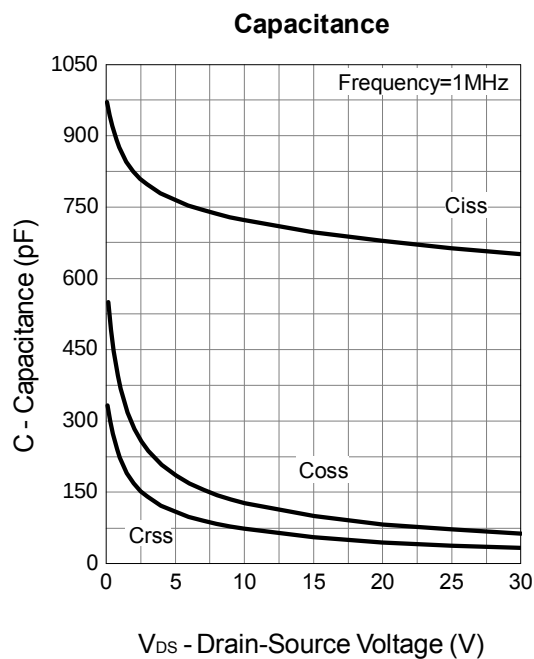
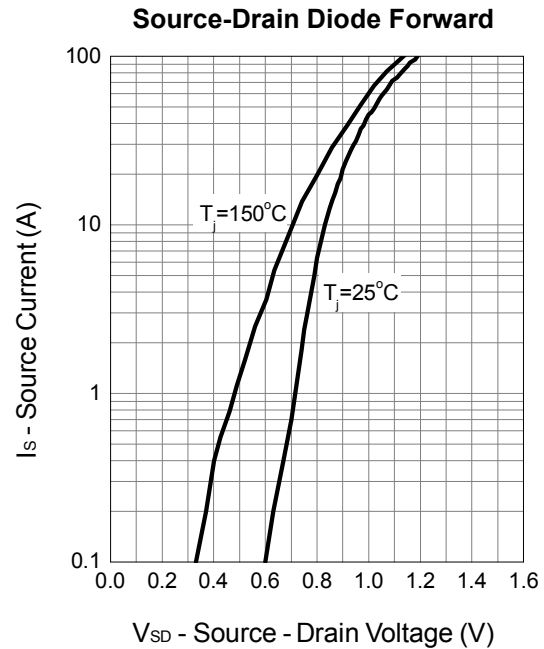
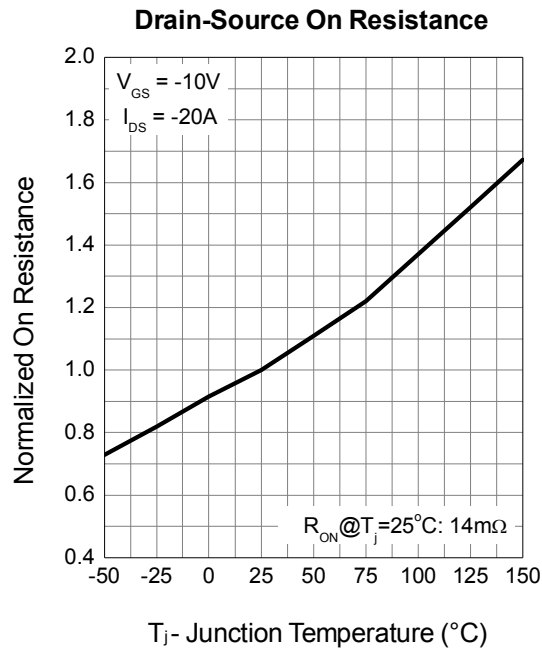
Typical Operating Characteristics



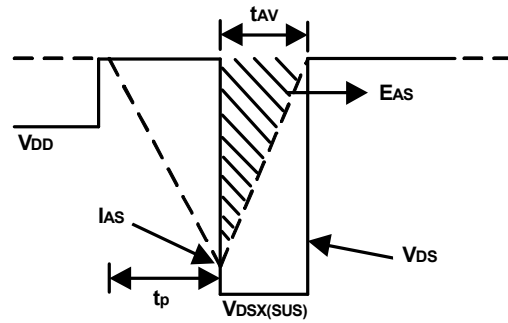
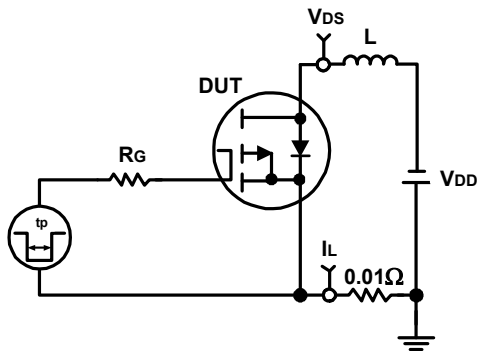
Typical Operating Characteristics (Cont.)



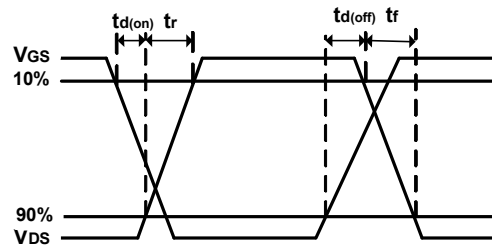
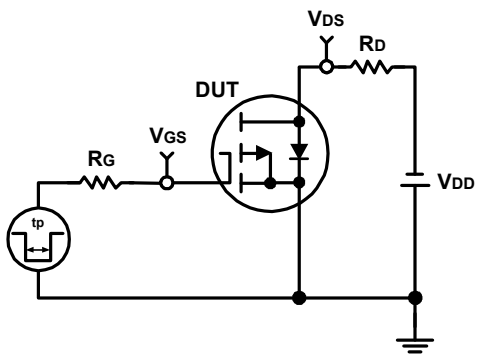
Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Package Information

